Koonin discusses earthshine

by Michael Benedetti

Dr. Steven Koonin discussed the status and future applications of earthshine at the year’s first Watson lecture. In his lecture, titled “Global Change and the Dark of the Moon,” Koonin explained how he and his colleagues are updating a 65-year-old French experiment to measure global climate change.

According to Koonin, understanding the mechanisms of global climate change is difficult, because of the complex feedback loops that occur in nature. For example, if something were to cause the earth to heat up, this heat would in turn melt the ice caps a little, making the earth less reflective. The planet would then absorb more sunlight, making it even hotter. However, this heat would also increase global cloud cover, which would make the earth more reflective, helping to cool the planet.

One of the most important elements of the earth’s complex climate is the amount of sunlight the earth reflects (its albedo). Global temperature is very sensitive to the albedo, so precise albedo measurements are needed if we are to learn just how much of an effect mankind is having on temperature changes.

Koonin’s experiment measures the earth’s albedo using earthshine—light that comes from the sun, reflects off of the earth, and illuminates the dark part of a crescent moon. Ordinarily, this earthshine (especially compared to the sun’s light that comes from the bright crescent of the moon), but it is easily measured with instruments.

In Koonin’s experiment, the amount of sunlight reflecting from some light point on the moon is compared with the earthshine on a point in the dark part of the moon. From this comparison, the earth’s albedo can be measured.

Koonin explained that the method his team is using to measure earthshine is superior to satellite measurements for several reasons. First, satellites can only look at a small portion of the earth at any one time. In contrast, the earthshine experiment measures the light reflected from the entire surface of the earth. Also, satellites are very expensive to build and maintain. “In fact,” said Koonin, “at the moment, there are no satellites doing precision measurements of the earth’s albedo.”

The technique used by Koonin’s team was first developed by the French astronomer Andre Danjon early in this century. Danjon took data on earthshine as far back as 1927, and Koonin hopes that errors in Danjon’s data can be corrected to provide a 65-year record of earthshine records. Such a lengthy record would show major changes in the earth’s albedo during this century.

At present, Koonin’s team is perfecting their equipment and methods, and looking to the future.

It’s part of our past: A look at the history of Caltech’s Black students

by Edray G. Jones

Editor’s Note: This is the first in a series of articles that will appear throughout the term. These articles are excerpts of research performed over the past 12 months on “The History of Caltech’s Under-represented Students.”

Every year, we use the second month of the year to pay homage to Presidents Washington and Lincoln. While some may call them our Founding Fathers, what is their work in organizing America, others call them Nefarious Gangsters for their work in institutionalizing slavery. Whatever you believe, we have set aside both February 21 and 22 to acknowledge their deeds

Not many years ago, the United States declared this season Black History Month. In 1926, historian Carter G. Woodson helped to create Negro History Week. Now, after Negroes have turned into African-Americans, Blacks are proud to joke that “the Man” has given them the shortest month of the year during which to celebrate their history.

However, Black history is limited to neither pictures from 1863 of children and police dogs in Birmingham, Alabama, nor speeches from 1968 by militant men preaching about “Blue-eyed devils.” It is more familiar than we choose to believe—Caltech itself has a rich history of Black students.

Dr. James Ellis La Valle was perhaps the first Black graduate student to enroll at Caltech. Many of us believe that since there are presently 25 African-American students out of a community of 1800, Black students have been at Caltech for only the past ten years. This is not true; Dr. La Valle entered the doctoral program in 1937. In fact, he entered just one year after he won an Olympic medal.

Jim La Valle was born in 1918 in San Antonio, Texas. He moved to California, where he attended Los Angeles Polytechnic High School. One day, the track coach needed someone to pace one of his half-mile distance runners. Reluctantly, La Valle agreed. All were surprised when he ran faster than his “competition.”

“As of then I was officially on the see US-CLBB, page 3
ASCIT BOD minutes, January 4th

by Karen Shih

Present: ASCIT BOD (minus Michael Brundage), Dave Derkits, Barbara Weitz, Tatayoi Murase, Christian Waite, Michael Zeiten, Gavin Claypool

New business
- Interview for Publications Darkroom Chairman: Barbara Weitz. Motion to appoint Barbara for the remainder of the term passes. (6-0-1).
- Motion to appoint Karen Shih to the Rig T Staff as requested by the current staff passes. (5-0-1; Absent was late).
- RP Club—possibly starting a new club for future endeavors.

Old Business
- Two out of three little t editors are on leave; lots of financial business is left hanging.
- Treasurer
  - Waiting for second term dues to arrive; everything looks O.K. for now.
- Jan Room gets its first term money.

Freshman Director-at-Large
- UROH is done! It is the Undergraduate Research and Opportunities Handbook, and contains research job openings listed by department. Copies are available for viewing at the Dean's Office, DRL.

MOM is a math prof at a small midwestern university.

WHY DON'T WE GO VISIT THE TOY. SCIENCE MUSEUM?

WHATEVER.

DR. BLUEBERRY TONES

1.00 AM - 4:00 AM CARTOON

DIEP KHANH

Ed McMahon has alwaysbugged me

Dear Ernest,

I accidentally opened my Am's 95 final while reading in the bathroom. What should I do?

—Desperate in Dunye

Dear Anoty,

You should take the exam in one continuous sitting.

Dear Ernest,

You hear a lot of different stories about the origin of quantum mechanics—sometimes Planck did it, sometimes Schrödinger, Heisenberg, or even Einstein. What was the first to come through the brain?

—Looking For My Roots in Kellogg

Dear Steve,

Although the modern age's greatest scientific theory is commonly attributed to these turn-of-the-century Germans, quantum mechanics is considerably older than you suspect. The name "quantum" was first seen in the 1470s as a corruption of the ancient Chinese Kaou Dung mechanics, which was brought to Europe in the early renaissance via the Arabian peninsula, where the classical Islamic scholars had translated the works of the Han dynasty Kaou Dung mostly into nearly two centuries before Schrödinger and Heisenberg made the next significant advance.

—Ernest Von Mission

Dear President,

What is your opinion on Catherine the Great's death? Horse, or no horse?

—A Curious Historian

Dear Phil,

No horse.

Dear Ernest,

I recently purchased a frost-free refrigerator for my collection of severed snowman heads, assuming that frost build-up would adversely affect the purity of the snow. My question is, how can a refrigerator of this type keep things frozen without causing frost to form?

—A Puzzled Child

Dear Calvin,

In the United States Constitution, the states are specifically authorized to exact tariffs dealing with the commerce of solidified water between cooling units and the outside atmosphere. To avoid these taxes, manufacturers began producing refrigerators with frost-eating bacteria installed in the air circulation systems. Thus, while your snowman heads will not be coated with frost, they probably won't survive the bacterial onslaught.

—ER
Afghanistan
Troops loyal to the former Commu­nist government began shelling Kabul, the capital, on New Year’s Day. Dozens of people have been killed. President Burhanul­din Rabbani accused Prime Minis­ter Gulbuddin Hekmatyar, leader of the conservative Muslim resis­tance group Hezb-i-Islami, of con­spiring with the communists to over¬throw the government.

Georgia
Ex-president Zviad Gamsakhurdia reportedly committed suicide in his compound in Tskhinvali on December 31 after it was stormed by pro-government troops. Gamsakhurdia’s nationalist, isolationist government was overthrown in 1992, when he was replaced by former Soviet foreign minister Eduard Shevardnadze.

Kashmir
Representatives of India and Pakistan ended negotiations over the disputed Kashmir region on Monday. No progress was made, and there are no immediate plans for further talks.

Mexico
The Zapatista National Libera­tion Army, an Indian guerrilla group, began an armed rebellion in the state of Chiapas on January 1, the day that the North American Free Trade Agreement took effect. Hundreds of people have been killed, and the guerrillas have alleg­edly captured a former state gov­ernor. The Indians said in their declaration of war that they are protesting Mexico’s unfair eco­nomic policies, citing NAFTA as an example.

Northern Ireland
Eleven stores in Belfast were damaged by IRA bombs on New Year’s Day.

North Korea
North Korea is reportedly close to an agreement with the U.S. on international inspection of seven of its nuclear sites. U.S. officials fear that North Korea may already have enough refined nuclear ma­terial to manufacture a bomb.

Venezuela
At least 100 inmates were killed in a bloody riot at the National Jail of Maracaybo on Monday.

Caltech Velo starts new year’s racing season

by Michael Kantner
On Thursday, January 13 at Noon in Winnott Lounge, Caltech Velo, the Caltech Bicycle Club will be having its first meet of the new year. In addition to the usual busi­ness, we will be organizing the rac­ing team and training schedule.

The team will be Caltech’s second year of intercollegiate cycling. Last year we competed in several races, and performed well. This year we hope to do better.

There is collegiate racing for all levels from beginning to Olympic caliber. The men are divided into four skill levels, and the women are divided into two. People can race in different skill levels. Races range from 12 miles to over 50, depending on skill level and race location. In the lower levels, the emphasis is on having fun.

The racing season runs from mid-February through April. There are races every weekend, but mem­bers do not have to attend every race. Locations range from San Diego to UCLA to Santa Barbara. Caltech Velo arranges group trans­portation and reimburses most travel costs.

In order to race you need three things: a bicycle, a helmet, and to be registered at Caltech as a stu­dent (Undergraduate or Gradu­ate). Of course, it does cost a small amount. Team dues are $25 per year (for racers, less for club mem­bers who do not race). The team jersey (uniform) will cost about $25. Each race will cost about $6. However, it is a lot of fun, and you can receive P.E. credit for it, too.

If you are interested or would like more information, please come to the meeting. If you cannot make the meeting, please contact Michael Kantner at 385-4882 or e-mail cycling@eco.caltech.edu.

continued from page 1

Lu Valle
team,” recalled Lu Valle. “The first race I entered was two days later. They put me in the quarter mile, and I asked the coach, ‘How do you run this race?’ The coach was a bit of a joker, and he replied, ‘Run as fast as you can as if you were running a marathon, and win.’”

In 1932, while an undergradu­ate at UCLA, he attended the Inter-Collegiate Amateur Athletic Association of America (AAA) meet in Boston. He won the quarter mile in 46.8 seconds; after that, he was established in college ath­letics. In fact, by 1935, Lu Valle was the captain of the track team.

His academic career at UCLA was equally impressive. Besides being a straight “A” student, he was inducted into both the Phi Beta Kappa and Sigma Xi honor societies, and had a short story published in the Atlantic Monthly after winning a writing competi­tion. By 1936, he had graduated with honors degrees in both chemistry and mathematics.

Lu Valle’s exciting life was off to a grand start, but his career was just beginning. He qualified for the Summer Olympics to be held in Berlin, Germany, less than six months later. In the lower levels, the emphasis is on having fun.

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fee Tickets for Caltech Students
The Bonodis String Quartet will give a Coleman Chamber Music Concert on Sunday, Janu­ary 16 at 3:30 p.m. in Beckman Auditorium.

Included in their program will be Brahms’s Quartet in A minor, op. 51, no. 2; Schubert’s Quartets in C minor, op. posth., D. 703; and Tchai­kovsky’s Quartet in F Major, op. 9, no. 2.

Fifty free tickets to the con­cert are available to Caltech stu­dents with I.D. (limit two free tickets per I.D.). These tickets are available at the Caltech Ticket Office, located just north of the Beckman Auditorium parking lot, beginning on Mon­day, January 10 (subject to avail­ability). Tickets are regularly priced at $22.50, $15.00, $15.50, and $12.00. Call campus exten­sion 4652 for more information.

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January 7, 1994

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The Chairman shines through
by Michael Benedetti

When I first popped a copy of Frank Sinatra's Duets into my tape deck, I was worried. I'd always enjoyed Sinatra's work in the past, but I was concerned that he'd lost his touch. Frank had performed his phrasing is better than ever. But I was concerned that he'd lost his touch. Frank had performed miserably in a recent TV special, and I had little hope for his new album.

Thankfully, my fears were unfounded. On Duets, Sinatra shines. Although his voice is not as strong as it was, and nowhere as smooth, as it was, and nowhere as smooth, his phrasing is better than ever. The album is full of classic songs, songs Sinatra has performed thousands of times, and his familiarity with them really shows.

Duets is, of course, an album of duets with various pop singers, people like Barbra Streisand, Luther Vandross, and Julio Iglesias. Unfortunately, Frank's skill of Sinatra's accompanists are not always up to his own, Charles Aznavour (on "You Make Me Feel So Young") has some trouble getting into the duet, and Aretha Franklin (on "What Now My Love") lets her towering talent collapse all over the song, getting in the way of the band and of Sinatra himself.

For the most part, though, the duets are excellent. Sinatra's pairing of Tony Bennett on "New York, New York," and Bono (yes, the U2 guy) turns Cole Porter's "I've Got You Under My Skin" into high camp. The way his breathy meaning contrasts with Sinatra's jazzy vocals is priceless.

The only drawback to Duets is that most (perhaps all) of the duets are not really. Sinatra first recorded the tracks with the band, then sent the tapes off to his partners for them to record their vocals. This arrangement prevents any real chemistry between the singers, leaving some of the tracks a little dry. 11 wins, 2 ties, no real losses.

George Thorogood at the Wiltern December 4th
by Julius Yang

George Thorogood brought his own signature style of rock 'n' roll to the Wiltern in Hollywood on Saturday, December 4. Backed by the Delaware Destroyers, Thorogood played his way through more than a dozen high-energy boogies such as "House Rent Bluesl,

"Move One Beer," "Rockin' and Boogie." Thorogood played more than a dozen high-energy tracks, adding measure after measure of screaming slide licks for his own signature style of rock 'n' roll. Though they've been around for more than fifteen years now, Thorogood and his band still think, as he said during the show, "It takes to be adult, huh?" His music reflects that attitude, being by turns dirty and crude, and low brow. But these are not flaws by any means—Thorogood demonstrated that a straightforward three-chord blues boogie could knock your socks off as easily as snappy jazz changes or a technically brilliant guitar solo.

Veterally every song on his Live album was performed at this concert except "Bottom of the Sea" and the then-encore "Reelin' and Rockin'". What I admired was that, though this tour was ostensibly in support of his new album "Get a Haircut," Thorogood was not afraid to play only one or two tracks from that album, preferring to focus on his tried-and-true covers and a few hits like "Bad to the Bone" and "No Particular Place Live"...

His music is wonderful, and I was happy. The next day, the captain of the opposing team, Grant Base, came up to one of us and explained that he was so grateful that we were willing to play and that the conditions suited him so well that he had intended to take us out to dinner. Since he was leaving town early that day, he gave one of my teammates $100 to buy dinner for us instead. We decided to spend the money on pizza and ice cream for about 20 students and called the gift, of course, our Pizza Grant.

This year, Grant came to the Caltech-UCLA Pro-am and I was able to play one hand with him. At IMF scoring, we were defending INT on the following hand:

We speak English, Chinese, and Spanish.
HERES A LIST OF MY CHRISTMAS DEMANDS.

FOLLOW THE INSTRUCTIONS AND NOBODY GETS HURT.

YOU'RE QUIFFING, YOU WOULDN'T HURT MY PLASTIC WINDOW ONE YANK, SANTA, AND HE'S OFF LIFE SUPPORT.

REMINDER: DOB: IT IS BETTER TO GIVE TO OTHERS THAN TO RECEIVE ESPECIALLY AT CHRISTMAS.

IF YOU HAVE ANY MONEY I INCLUDED ITEMS WHICH CAN BE EASILY SHOPLIFTED.

OR YOU CAN CHECK THE BOX WHERE IT SAYS YOU AGREE TO BE MY PERSONAL VALET FOR I NEED MY LIFE TO SNAP A PENCIL, ERASE, ETC.

BUT I DON'T HAVE ANY INCOME... EXCEPT FOR THE COINS PEOPLE DROP WHEN I GIVE THEM WEDGIES.

IT SEEMS LIKE EXACTLY THE WRONG SEASON TO PICK UP THE PENCE ON THIS SORT OF THINGS.

WHERE AM I?

WE'RE EXTINGUISHING THE ORGANIZATION TO ELIMINATE LEVELS AND PUT EVERYBODY IN A WIDE SALARY BAND.

SNAP!

NOW INSTEAD OF SETTING A PROMOTION YOU'LL ONLY GET A RAISE.

WHERE AM I?

I NEED A DRINK. THIS IS A TEMPORARY FIX... BUT YOU'LL GET IN NOW.

I'M SORRY, DAVE, BUT YOU'RE BEING TRANSFERRED TO MARKETING AND THERE'S NO BOSS TO TRAIN YOU AS A MARKETER.

SNAP!

NOW INSTEAD OF NOT SETTING A PROMOTION YOU'LL ONLY GET A RAISE.

505 HELPING!

SO, WHAT'S THE TITLE DO WE USE? YOU'LL ALL BE NAILED BEVERLY.

McKinsey & Company, Inc.

Invites
Caltech Students
to attend an

Information Session
to learn more about our 2-year Business Analyst Program

Wednesday, January 12, 1994
in the East/West Room of the Athenaeum
1201 East California Street
from 7:00 p.m. to 9:00 p.m.

We look forward to seeing you there!

McKinsey & Company, Inc., is an international strategic management consulting firm with 58 offices in 28 countries around the world. We serve mostly Fortune and International 500 company top executives on issues of strategic importance. Our mission is twofold: to help clients make substantial and lasting improvements in their performance, and to build a firm that is able to attract, develop, excite, and retain exceptional people.

Interviews will be held on February 15, 1994. Interested candidates should submit their resumes along with a transcript and SAT/GMAT/LSAT/GRE scores by February 1, 1994, to:

Tricia Snider
400 South Hope Street
Los Angeles, CA 90071
CRIME
AND
INCIDENT
BEAT

by Gypsy Achong

11/30 9:00 A.M. - 1:30 P.M. $80 was removed from a workstation in 287 S. Hill. The purse was located under a desk. 11/30 12:00 P.M. - 12/2 2:00 A.M. $70 was removed from a student's wallet in an unlocked desk drawer in Steele. The office is unlocked except at lunch time and after work.

7/2/1 4:10-5:45 P.M. A bicycle was removed from a stair railing in Blacker. The bike was secured with a chain and lock. $175

7/15 11:30 A.M. - 1:30 P.M. A bike was removed from the north side of Steele. The bike was locked with a cable. $200

7/15 9:00 P.M. - 12/15 3:30 P.M. The rear tire of a bike parked on the east side of Ricketts house was removed. The bike was locked by the frame and the tire was of the quick release type. $60

12/5 7:50 A.M. - 10:15 P.M. $80 was removed from a work station in 287 S. Hill. The purse was located under a desk. The office is unlocked except at lunch time and after work.

Six week total: $10,787

Junior and Senior Computer Science, Engineering, Mathematics, Information Systems or Related Majors Are Cordially Invited to a Presentation By

Fidelity Investments®

Opportunities in Brokerage Systems Division

Systems Associate Program

Speakers

Richard Robinson
Allyn Gardner

DATE: Monday, January 10, 1994
PLACE: Student Activity Center, Room 26
TIME: 4-6 p.m. (reception to follow)

If you are unable to attend our presentation, please forward your resume to:

Anne E. Spangler, College Relations,
Fidelity Investments, 82 Devonshire Street,
Mail Zone A3B, Boston, MA 02109.

We are an equal opportunity employer, M/F/D/V.

Stewart's A Christmas Carol returns to Caltech
by Michael Kantner

After most students had left for winter vacation, Patrick Stewart, also known as Captain Picard on Star Trek: The Next Generation, gave two performances of Dickens's A Christmas Carol. This one-man show was previously performed on Broadway, where he won the Drama Desk Award for Best Solo Performance (1992). As expected, the performance at Caltech was entertaining.

With a small assortment of stage furniture, he created just enough visual clues to differentiate scenes. By changing his voice and body language, he changed characters. Sound effects were accomplished with a foot stomp or two. Within minutes, he created a little world in the audience's imagination. He seemed equally comfortable on a bare stage as when travelling warp 9 through to the edges of the universe. It was a refreshing change from shows that dazzle with technology or dangerous stunts. He entertained with his talent, the ability to make one believe, for a short time, that they are not in a theater, but somewhere else.

Caltech Public Events puts on many shows and concerts at Beckman Auditorium. Students, with valid Caltech ID, can purchase tickets (one per I.D.) for half price on the day of the show, or on Friday for weekend shows, from the ticket office, located north of the Beckman Auditorium parking lot. Upcoming events include Masters of the Banjo on Saturday, January 9th. Call campus extention 4652 for more information.
The California Tech

January 7, 1994

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Events and Notices

The Nuclear Regulatory Commission Gradua-
tion Fellowship Program supports scholarly and practical work experience in health physics, radiological engineering, environmental monitoring and pre-

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